

ELECTRO-DIAGNOSTICS

electro
diagnosis

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1. EEG [ELECTROENCEPHALOGRAPHY]

1. EEG stands for electroencephalography.
2. It's record the electrical activity of brain.
3. During an EEG test, small electrodes like cup & disc type are placed on the scalp.
4. They pick up the brain's electrical signals and send them to a machine called 'electroencephalogram'.
5. ~~freq - 1 to 100~~ It records the signals as wavy lines on to a computer screen or tape in order of microwatt.
6. EEG waves - Frequency Range = 0.1 to 100
amplitude = 2 to 200 micro v

* Requirements :-

1. EEG (8/16 channels).
2. Silver cup electrodes / metallic bridge electrode.
3. electrode jelly.
4. Rubber cap.
5. quiet dark comfortable room.
6. skin pencil & measuring tape.

* HISTORY :-

1. In 1875 - 'Richard caton' (physician) from Germany, Discovered electrical activity of brain by probing the surface of exposed brains (cerebral hemispheres) of animals (Rabbits & Monkeys).
2. In 1890 - Adolf Beck (Polish physiologist) of Poland, investigations of spontaneous electrical

activity of the brain of Rabbits & dogs.

* PROCEDURE :-

1. A standard non-invasive EEG takes about 1 hour. The pt will be positioned on a padded bed or table, or in comfortable chair.
2. To measure the electrical activity in various part of the brain, a nurse or EEG technician will attach 16 to 20 electrodes to the scalp.
3. The brain generates electrical impulses that these electrodes will pick up. Then a temporary glue will be used to attach them to the skin, no pain will be involved.

29/5/21 MRI CT SCAN [Computer tomography]

1. CT is well accepted imaging modality for evaluation of the entire body.
2. The images are obtained directly in the axial plane of varying tissue thickness with the help of a computer.
3. Some pathway pathology can be seen in sagittal or coronal plane by reconstruction of the images by computer.
4. CT has undergone several evolutions & now the days multi-detectors CT Scanners have been evolved which have application in the clinical field.

5. Hounsfield and Cormack got the 1979 Nobel Prize for their contributions to CT.

6. Allan McLeod Cormack's theoretical calculations of X-ray was used by Hounsfield.

* Procedure :-

1) Body CT / CAT Scan :-

1. Body CT scan can take images of any body that can fit in the CT Scanner.

2. Modern CT Scanners can take images of a patient's entire body in well under a minute.

3. This can be useful when doctor need to see different body part & organ quickly, for example after a motor vehicle accident.

* Conditions :-

Body CT scans can diagnose a variety of conditions such as :-

Broken bones (skull, spine, ribs, extremities)
blood clots in the brain & chest.

abnormalities of the lungs such as pneumonia
inflammation in the abdomen (such as appendicitis or gallbladder disease)

Stones (in the gallbladder or kidneys)

Blocked bowel passage or twisted bowel

Cancers in various organs & body parts.

MRI [Magnetic Resonance Imaging]

MRI is a radiology technique that uses magnetism, radio waves, & a computer to produce images of body structures.

MRI is based on the principles of NMR. In 1997 the 1st MRI exam was performed on a human being.

It took 5 hours to produce one image.

Father of MRI - 'Raymond Vahan Damadian'

Principle :-

1. MRI makes use of the magnetic properties of certain atom nuclei.

2. H₂ nucleus (single proton) present in water molecules & therefore in all body tissues.

3. The H₂ nuclei partially aligned by a strong magnetic field in the scanner.

Process :-

1. Scanner.

2. Computer.

3. Recording

Applications :-

1. Most ailments of the brain, including tumours.

2. Sport injuries.

3. Musculoskeletal problems.

4. Most spinal conditions / injuries.

5. Vascular abnormalities.

6. Female pelvic problems.
7. Some gastrointestinal tract conditions
8. Certain ear, nose & throat (ENT) condition.
9. Soft tissue and bone pathology / conditions.